

Systems Evaluation and Assessment (SEA) Sub-Element

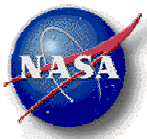
Common Scenarios and Metrics Requirements Milestone 5 Deliverable

Sandy Lozito

Level 3 Manager

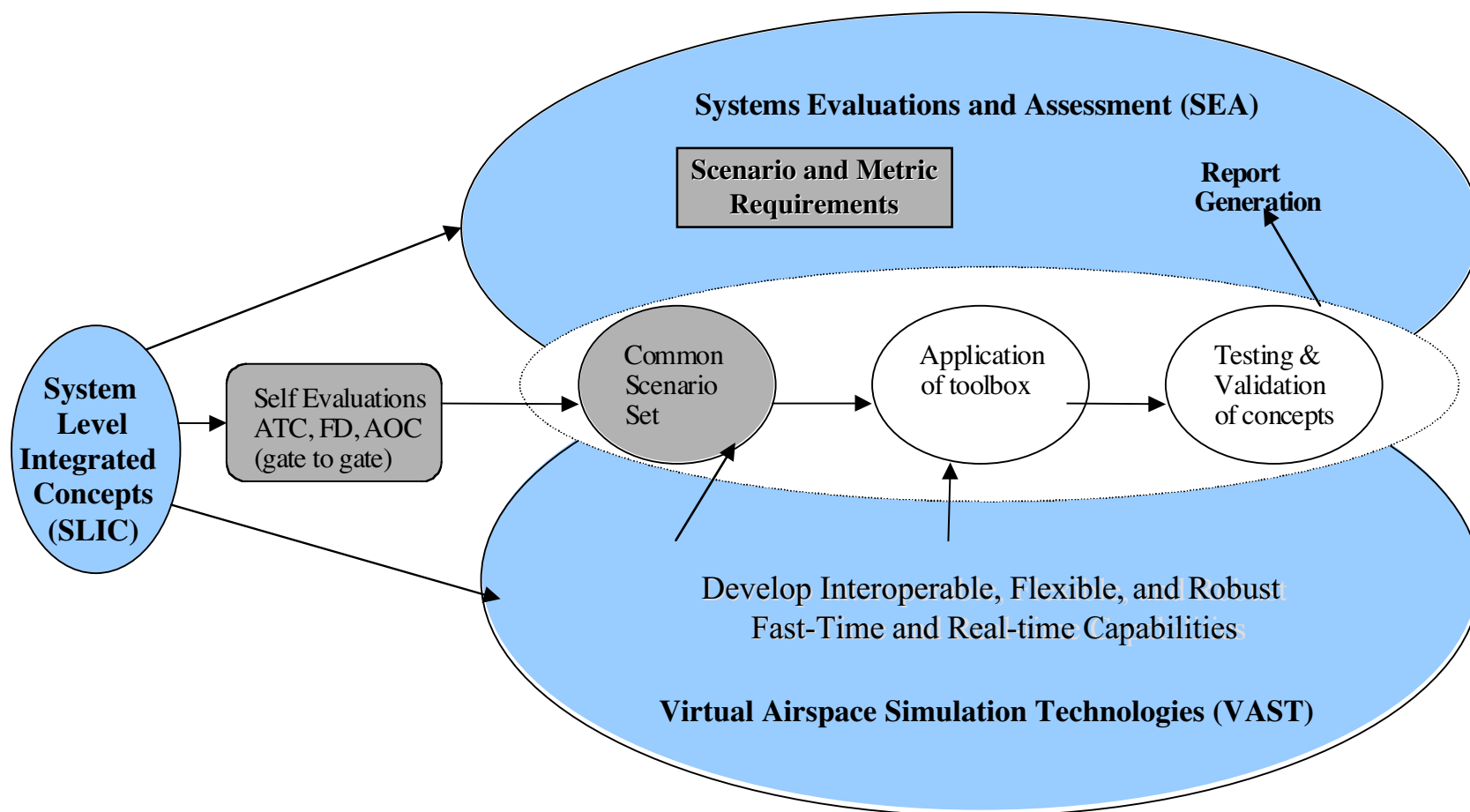
Systems Evaluation and Assessment Element

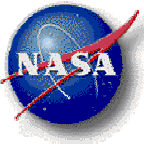




System Evaluation and Assessment

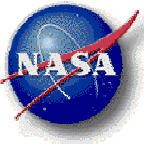
Relationship between the Sub elements





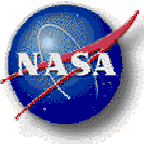
System Evaluation and Assessment General Tasks

- **Develop scenarios and metrics for evaluation of the SLIC concepts**
- **Conduct an initial validation assessment of the VAST real-time tools**
- **Conduct an initial assessment of the selected concepts**
- **Conduct an initial assessment of the integrated concepts**
- **Conduct the final evaluation of the integrated concept(s) using the VAST tools**



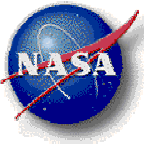
Scenarios/Metrics

- **Scenarios and Metrics will be used to help evaluate the concepts from VAMS/System-Level Integrated Concepts**
 - Initial evaluation of concepts will be self-evaluation
 - The scenarios/metrics for self-evaluation will be used to assist the SEA scenario/metric development
- **There can be many scenarios and metrics, but ultimately they must be applicable for broad evaluations**
 - Scenarios addressing multiple airspace domain and concepts addressing more specific domains
 - Scenarios addressing multiple parts of the triad (AOC/ATC/FD)



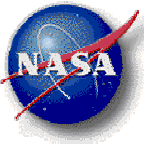
Scenario Requirements

- **Scenarios are necessary for the evaluation of the “capacity-increasing” concepts**
- **Scenarios must test the concepts’ ability to increase capacity and maintain (or increase) safety**
- **Scenarios must cover all domains (e.g., surface, terminal, enroute)**
- **Scenarios must consider normal and non-normal events**
- **Scenarios must cover real-time and fast-time testing**
- **Scenarios must test all parts of the NAS triad: AOC, ATC, flight deck**
- **Scenarios must be able to test both single-domain concepts and more broad concepts**
- **SEA is writing the requirements for the scenarios**



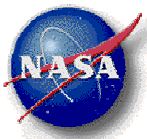
Documents in MS5 Scenario and Metric Requirements

- **Introduction**
- **Forecast and Demand**
- **Common Scenario and Metric Set**
 - **Evaluation questions**
 - **Scenario Elements**
 - **Metrics**
 - **Dependent variables**
- **Concept Evaluations**
- **Storyboard (only two concepts)**
 - **Point-to-Point (Seagull)**
 - **Surface Operations Automation Research (Optimal Synthesis)**
- **Data Sources**
- **Dependent Variables Calculations**
- **Scenario Elements Breakdown**



Source Materials for MS5

- Concept descriptions from concept developers
- Scenario descriptions from concept developers
- Interviews with many concept developers
- Logistics Management Institute
- FAA's Operational Evolution Plan Metrics
- Research papers relevant to concepts
- Concept development matrix

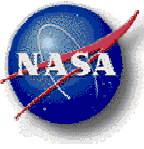


Scenario/Metric Parameters

Forecast	Demand	System	Environment	Scope
Economic Activity	Number of Airport	Aircraft Characteristics	Weather	Whole v. part of NAS
Energy Availability	Fleet mix	Airport Characteristics	Safety Situations <ul style="list-style-type: none">Operational errorsReduced Landing CapacityAircraft/Vehicle On the Runway	Fidelity of the Scenario
War and pestilence	Load factor	Airspace Characteristics	Failures	Temporal Resolution
Environmental Concerns	Schedule	CNS Infrastructure	Security Situations	Simulation Timing/Synchronization
Demographics	Origination/Destination Pair	NAS Architecture		
Travel Confidence		Humans		

Note: Assume a multiple-day schedule of flights for these scenarios





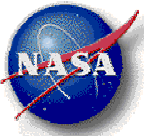
Summary of the Milestone 5 Documents (1)

- **Scenario/metric framework**
 - Common questions/issues for the concepts
 - Common set of metrics
- **Concept analyses**
 - Details related to the scenario and metric framework
 - Separate analyses for each of the eleven VAMS concepts
- **Storyboards (2 examples)**
 - Development details necessary to create a simulation for concept investigation
 - One example appropriate for real-time simulation development (SOAR)
 - One example appropriate for fast-time simulation development (PTP)



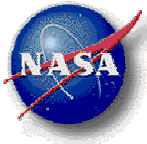
Summary of the Milestone 5 Documents (continued)

- **Dependent Variables**
 - Specific metrics and measures for real/fast time simulation
 - Variables relevant to concept assessment
- **Dependent Variable Calculations**
 - Recommended calculations for determination of various metrics (e.g. capacity calculations, workload calculations)
 - Metric calculations from various sources, including OEP, SLIC element, etc.
- **Forecast/Demand Data**
 - Forecast and demand data used within the Program/Project
 - Assumptions about economy, aircraft type, etc.
 - Provided by LMI



Summary of the Milestone 5 Documents (continued)

- **Data Sources**
 - Sources of reference data for scenario development and use
 - Weather data, air traffic management data, etc.
- **Scenario Element Breakdowns**
 - Provide further information about detailed scenario elements necessary for concept assessment
 - Guidance for development and prioritization of scenario characteristics



Next Steps

- **Feedback from concept developers regarding their concept analysis**
 - Accuracy of information
 - Level of detail
 - Format preferences
- **Feedback from VAMS Office**
 - Development capabilities
 - Level of detail
- **Prioritization**
 - Prioritize requirements based on concept developer's feedback and VAMS Project Office feedback